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TRANSMITTAL OF APPEAL BRIEF			Docket No. 05516/089001
In re Application of: Carl M. Hoffmaster et al.			
Application No. 09/924,961-Conf. #1995	Filing Date August 8, 2001	Examiner H. C. Dang	Group Art Unit 3672
Invention: ADVANCED EXPANDABLE REAMING TOOL			

TO THE COMMISSIONER OF PATENTS:

Transmitted herewith is the Appeal Brief in this application, with respect to the Notice of Appeal filed: November 1, 2004

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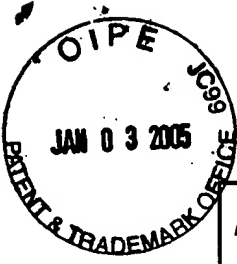
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Dated: January 3, 2005

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Dated: January 3, 2005

Signature: Ava R. Brown (Ava R. Brown)



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<input type="checkbox"/> Applicant claims small entity status. See 37 CFR 1.27		Application Number	09/924,961-Conf. #1995	
TOTAL AMOUNT OF PAYMENT		Filing Date	August 8, 2001	
(\$)		500.00	First Named Inventor	Carl M. Hoffmaster
		Examiner Name	H. C. Dang	
		Art Unit	3672	
		Attorney Docket No.	05516/089001	

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FEE CALCULATION

1. BASIC FILING, SEARCH, AND EXAMINATION FEES

Application Type	FILING FEES		SEARCH FEES		EXAMINATION FEES		Fees Paid (\$)
	Fee (\$)	Small Entity Fee (\$)	Fee (\$)	Small Entity Fee (\$)	Fee (\$)	Small Entity Fee (\$)	
Utility	300	150	500	250	200	100	
Design	200	100	100	50	130	65	
Plant	200	100	300	150	160	80	
Reissue	300	150	500	250	600	300	
Provisional	200	100	0	0	0	0	

2. EXCESS CLAIM FEES

Fee Description	Fee (\$)	Small Entity Fee (\$)
Each claim over 20 or, for Reissues, each claim over 20 and more than in the original patent	50	25
Each independent claim over 3 or, for Reissues, each independent claim more than in the original patent	200	100
Multiple dependent claims	360	180

Total Claims **Extra Claims** **Fee (\$)** **Fee Paid (\$)** **Multiple Dependent Claims**

_____ - = _____ x _____ = _____ **Fee (\$)** **Fee Paid (\$)**

Indep. Claims **Extra Claims** **Fee (\$)** **Fee Paid (\$)**

_____ - = _____ x _____ = _____

3. APPLICATION SIZE FEE

If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$250 (\$125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).

Total Sheets	Extra Sheets	Number of each additional 50 or fraction thereof	Fee (\$)	Fee Paid (\$)
_____	_____	_____ (round up to a whole number) x _____	_____	_____

4. OTHER FEE(S)

	Fees Paid (\$)
Non-English Specification, \$130 fee (no small entity discount)	_____
Other: 1402 Filing a brief in support of an appeal	500.00

SUBMITTED BY

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Dated: January 3, 2005 Signature: Ava R. Brown (Ava R. Brown)



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : Carl HOFFMASTER, *et al.*
Serial No.: 09/924,961
Filed : August 8, 2001
Title : Advanced Expandable Reaming Tool

Art Unit : 3672
Examiner : Hoang C. Dang

Assistant Commissioner for Patents
Washington, DC 20231

APPELLANT'S BRIEF UNDER 37 C.F.R. § 1.192

Dear Sir:

Pursuant to 37 C.F.R. § 1.192, please consider the following Appellant's Brief in the referenced application currently before the Board of Patent Appeals and Interferences.

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I. Real Party in Interest

The real party in interest in the referenced application is Smith International, Inc. (“Smith”). Smith is the Assignee of the entire right in the present application.

II. Related Appeals and Interferences

To the best of the knowledge of the Appellant and the Appellant’s legal representative, there are no other appeals or interferences that will directly affect, be affected by, or have a bearing on the decision of the Board of Patent Appeals and Interferences (“the Board”) in this appeal.

III. Status of Claims

The present application, Serial No. 09/924,961 (“the ’961 application”) was filed on August 8, 2001. As filed, the ’961 application included claims 1–200, of which claims 1, 21, 29, 47, 65, 83, 86, 103, 121, 132, 151, 155, 160, 171, 174, and 182 were independent claims. On January 27, 2003, the Examiner issued a 16-way restriction requirement, with each group corresponding to an independent claim and the claims that depended therefrom. The Applicant elected Group X. (claims 132–150) without traverse. Claims 1–131 and 151–200 were withdrawn from consideration, and in a subsequent Reply, the Applicant cancelled claims 1–131 and 151–200. Claims 132–150 are presently pending in the ’961 application. All pending claims were finally rejected in an Office Action mailed on May 4, 2004. A Notice of Appeal was filed on November 1, 2004.

The Examiner rejected the claims under 35 U.S.C. §§ 102 and 103. Claims 132–135, 139, 140, and 150 were rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,853,054 (“McGarian”). Claims 143, 145, 146, and 149 were rejected under 35 U.S.C. §

103(a) as being unpatentable over McGarian. Claims 132–135, 139, 140, 143, 145, 146, 148–150 were rejected under 35 U.S.C. § 103(a) as being unpatentable over McGarian in view of U.S. Patent No. 6,507,025 (“Mensa–Wilmot ’025”). Claims 136 and 147 were rejected under 35 U.S.C. § 103(a) as being unpatentable over McGarian in view of Mensa–Wilmot ’025, further in view of either U.S. Patent No. 5,979,576 (“Hansen”) or U.S. Patent No. 6,142,250 (“Griffin”). Claims 137, 138, and 144 were rejected under 35 U.S.C. § 103(a) as being unpatentable over McGarian in view of Mensa–Wilmot ’025, further in view of either U.S. Patent No. 6,269,893 (“Beaton”) or U.S. Patent No. 6,516,293 (“Huang”). Finally, claims 141 and 142 were rejected under 35 U.S.C. § 103(a) as being unpatentable over McGarian in view of Mensa–Wilmot ’025, further in view of U.S. Patent No. 6,164,394 (“Mensa–Wilmot ’394”).

IV. Status of Amendments

A request for reconsideration was submitted by the Applicant after the Final Office Action. This request for reconsideration was considered not persuasive by the Examiner.

No amendment was submitted after the final Office Action. All previous amendments submitted to the Examiner during prosecution have been entered in the record. During prosecution, claim 132 was amended to clarify the “redundant cutter” limitation. This amendment was made in the Request for Continued Examination filed on April 1, 2004. The claims of record, as amended, are presented in marked-up form in Appendix A.

V. Summary of the Invention

The invention claimed in the ’961 application relates to an expandable reaming tool that includes at least two reamer pads, at least one blade formed on each of the at least two reamer pads, and a plurality of cutting elements disposed on the blades. The reamer pads are operatively

coupled to a tool body and adapted so that they may be displaced between a retracted position and an expanded position. Selected ones of the plurality of cutting elements disposed on one of the reamer pads are positioned so as to form a redundant cutting arrangement with other selected ones of the plurality of cutting elements disposed on a different reamer pad.

As stated in the background of the present application (pg. 3, ¶ 7-8), a cutting structure of a prior art near-bit reaming tool is typically symmetrical and includes expandable pads that may be activated using hydraulic pressure. The pads include cutting elements which, commonly, are PDC cutters. However, the PDC cutters are generally arranged in a relatively simplistic fashion, and the entire cutting structure is, consequently, relatively rudimentary in design.

As is further described in the background, one or more embodiments of the present invention may present advantages that are not present in the prior art. For example, some embodiments advantageously provide a more advanced reamer cutting structure by incorporating advanced cutting structures often used on PDC drill bits (pg. 3, ¶ 8). Accordingly, as shown and described for the present invention (Figures 2-3), an expandable reamer pad (32A, 32B) includes one or more blades (50) disposed thereon, where each blade (50) has a plurality of cutting elements (52) fitted on an edge of the blade (50) that contacts a well formation. Advantageously, because the plurality of cutting elements are disposed on an edge of the blade (32A, 32B), rather than on the reamer pad (32A, 32B), a clearance between a well formation and a surface of the reamer pad may be increased, thereby improving a cutting transport and drilling fluid circulation of the reaming tool (pg. 12, ¶ 44). Further, a geometric configuration of the blade may be

adapted in order to advantageously provide maximum cutting element exposure (pg. 12, ¶ 45-46).

VI. Issues

The issues presented on appeal are:

- (1) Whether McGarian discloses all of the limitations recited in claim 132 (Final Office Action, pg. 2, ¶ 2).
- (2) Whether the combination of McGarian and Mensa–Wilmot '025 make up for the deficiencies of McGarian alone (Final Office Action, pg. 3–4, ¶ 3).
- (3) Whether McGarian is properly combinable with Mensa–Wilmot '025 in the rejections under 35 U.S.C. § 103(a) in paragraphs 3, 4, 5, and 6 of the final Office Action (pgs. 3–6).
- (4) Whether Hansen or Griffin may be properly combined with McGarian in rejections under 35 U.S.C. § 103(a) in paragraph 4 of the final Office Action (pg. 4).

VII. Grouping of Claims

In this appeal, the Applicant argues that the independent claim, claim 132, is patentable over the prior art for the reasons stated below. Dependent claims are patentable for at least the same reasons. In addition, the Applicant argues that claims 136 and 147 are patentable over the prior art. Thus, for the purposes of this appeal, claims 132–135, 137–146, and 148–150 stand or fall together, and claims 136 and 147 stand or fall together.

VIII. Argument

A. *Whether McGarian discloses all of the limitations recited in claim 132*

Independent claim 132 was rejected under 35 U.S.C. § 102(b) as being anticipated by McGarian. “Anticipation under 35 U.S.C. § 102 means lack of novelty, and is a question of fact. To anticipate, every element and limitation of the claimed invention must be found in a single prior art reference, arranged as in the claim.” *Brown v. 3M*, 265 F.3d 1349, 1351 (Fed. Cir. 2001). This rejection is improper because McGarian does not disclose each and every limitation recited in claim 132.

Independent claim 132 recites an expandable reaming tool that includes (a) at least two reamer pads operatively coupled to a tool body and adapted to be displaced between a retracted position and an expanded position; (b) at least one blade formed on each of the at least two reamer pads; and (c) a plurality of cutting elements disposed on the blades. Claim 132 further requires that selected ones of the plurality of cutting elements disposed on one of the at least two reamer pads are positioned to contact the wellbore at a substantially same axial location as other selected ones of the plurality of cutting elements so as to form a redundant cutting arrangement.

The Pad–Blade–Cutter Limitations

McGarian does not disclose all three of the limitations relating to a pad, a blade, and a cutting element ((a), (b), and (c) described above), which are recited in claim 132. In paragraph 3 (pgs. 3–4) of the Final Office Action (and in each of the preceding Office Actions), the Examiner stated that McGarian discloses the invention “except for the ‘redundant’ cutters.” The

Applicant notes that in making this rejection, the Examiner failed to identify the specific elements in McGarian which were likened to specific limitations in claim 132. The following analysis, however, shows that McGarian does not disclose all three of the pad-blade-cutter limitations ((a), (b), and (c) described above).

McGarian discloses a 2-stage underreamer that includes pairs of blades (5A/B, 6A/B in FIG. 1) that are pivotally connected to the body by means of a pivot pin (McGarian, col. 2, ll. 60–62). McGarian describes how the blades (5A/B, 6A/B) are moved from a retracted position (shown in FIG. 2C) to an expanded position (shown in FIGS. 2 and 6) (McGarian, col. 3, ll. 48–62). Because the blades (5A/B, 6A/B) of McGarian are operatively coupled to the tool body (2) and adapted to be displaced between a retracted position and an expanded position, the Applicant believes the Examiner likened the blades (5A/B, 6A/B) to the at least two reamer pads recited in claim 132 (limitation (a)).

The Applicant notes that the blades (5A/B, 6A/B) of McGarian are not pads, as recited in claim 132. The present invention includes at least two reamer *pads* that may be displaced between a retracted position and an extended position, and at least one blade is formed on each pad. The cutting elements are then disposed on the blades. This configuration presents advantages that are not realized by the simple blades of McGarian. Specifically, the claimed structure enables the geometric configuration of the blade to be adapted to provide maximum cutting element exposure. This may reduce the “dead” material between cutting elements, which

Fig.1.

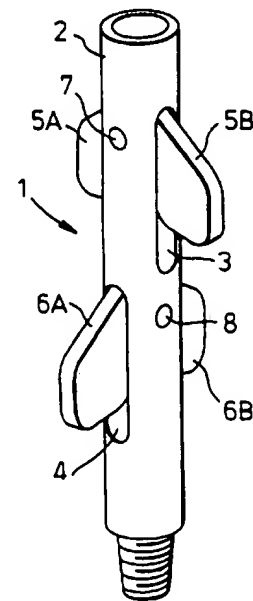


FIGURE A

will improve the longevity of the reamer by ensuring that cutting elements, not the blade material, contacts the formation. Thus, at the outset, McGarian does not disclose the recited “at least two pads.”

Figures A and B show a comparison of the McGarian device with that of the claimed invention. Figure A is a reproduction of Figure 1 of McGarian, and Figure B is a reproduction of Figures 2 and 3 of the '961 application. As can be seen, the McGarian device is a rudimentary device that includes rotatable blades with a wear resistant material on the surface for scraping against a formation to underream it. The claimed device, however, as seen in Figure B, incorporates advanced cutting structures. The pads, shown in cross section in Figure 2, are shown in an extended position. Figure 3 shows the advanced cutting structures of the present invention, which include much more than a simple wear resistant surface.

Even if the blades (5A/B, 6A/B) of McGarian are taken to be the reamer pads recited in claim 132, McGarian still does not disclose all of the remaining elements in the claim. Even in that case, in order to anticipate claim 132, McGarian must

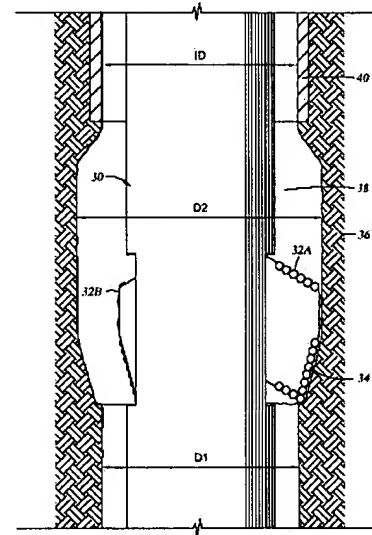


Fig. 2

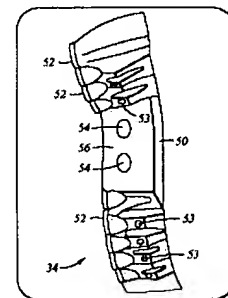


Fig. 3

FIGURE B

separately show (b) at least one blade formed on each of the at least two reamer pads, and (c) a plurality of cutting elements disposed on the blades. It does not.

In an Office Action mailed on December 2, 2003, the Examiner stated that the wear resistant members (52) of McGarian do not distinguish from the “at least one blade” and that McGarian discloses a plurality of cutting elements disposed on the wear resistant members (52). A closer reading of McGarian, however, shows that this is not the case.

McGarian states that a body (51) is secured (as by brazing) to a steel base arm in order to form a blade (5A/B, 6A/B) assembly. The wear resistant member (52) is generally C-shaped to “present a lower drilling face A which, during downward movement of the tool will act to drill material contacted by the drilling face A.” (McGarian, col. 5, l. 62 – col. 6, l. 11; FIG. 6). Thus, the wear resistant member (52) of McGarian performs the drilling. This is precisely the “rudimentary” cutting element design of the prior art that is described in the Background of the '961 application.

The “wear resistant member” (52) of McGarian cannot be likened to the “at least one blade” recited in claim 132 because the stated purpose of the wear resistant member is not the same as the stated purpose of the blades recited in the claim. The specification of the '961 application states that longevity is maximized by ensuring that “the cutting elements (52 in Figure 3), rather than the blade (50 in Figure 3) material, contacts and underreams the formation.” Thus, if anything, the rudimentary “wear resistant member” of McGarian is analogous to the cutting structures of the present invention, not to the blades.

Moreover, the “wear resistant member” (52) of McGarian is but a single structure, and that structure is mounted on the McGarian blade (5A/B, 6A/B) (likened to the claimed

“pad”). Thus, it cannot properly be likened to the “plurality of cutting elements disposed on the blades,” as recited in the claim.

Furthermore, the structure recited in claim 132 presents advantages that are not realized by the underreamer described in McGarian. Specifically, because the plurality of cutting elements are disposed on an edge of the blade — rather than on the pad — a clearance is created between the formation and the surface of the reamer pad. This is called “blade standoff,” and it improves cutting transport, drilling fluid circulation, and cutting element cooling (§ 44, pg. 12). McGarian does not disclose any structure that presents the advantages of blade standoff.

Thus, even if the blades (5A/B, 6A/B) of McGarian are likened to the “at least two reamer pads” recited in claim 132, McGarian still fails to show either the “at least one blade” or the “plurality of cutting elements” recited in claim 132. Accordingly, the Examiner’s rejection of claim 132 as being anticipated by McGarian is improper and should be reversed.

Redundant Cutting Arrangement

McGarian does not disclose the “redundant cutting arrangement” recited in claim 132. The specification of the ’961 application defines a “redundant” cutting structure in paragraph 47 on page 13. Specifically, the specification states that “opposing cutting elements (such as 60A and 60C, or 60B and 60D [in Figure 5A]) may be arranged to contact the wellbore (38 in Figure 2) at substantially the same axial location, thereby providing a ‘redundant’ cutting structure adapted to ensure efficient drilling of the wellbore.”

The specification goes on to provide specific examples. “[S]elected ones of the cutting elements 60 on reamer pad 60B may be positioned in a redundant arrangement with selected other ones of the cutting elements 60 on reamer pad 62D.” Thus, a “redundant cutting

arrangement” refers to a cutting element on one reamer pad that contacts the formation at the same location as a cutting element on a different reamer pad.

In paragraph 3 (pg. 2) of the Final Office Action, the Examiner stated that the “cutting elements 54 or 58 on one blade clearly contact a wellbore at a substantially same axial location as the cutting elements 54 or 58 on the other blade.” The Applicant respectfully submits that this is not the case.

In the first place, McGarian discloses that the elongate bars (54) or tungsten carbide inserts (58) are disposed on gage face (D) of the blade. The elongate bars (54) and tungsten carbide inserts (58) of McGarian, therefore, may be likened to the gage inserts (54 in FIG. 3) disclosed in the specification of the '961 application and recited in claim 134. McGarian does not disclose any cutting structures, as recited in claim 132, with a redundant cutting arrangement.

Second, as noted above, McGarian discloses a “wear resistant member” (52), which is a single rudimentary surface and not a “plurality of cutting elements.” Because McGarian does not disclose the cutting elements recited in claim 132, it also cannot disclose cutting elements in a “redundant cutting arrangement.”

Thus, the Examiner’s rejection of claim 132 as being anticipated is improper, and it should be reversed.

B. Whether the combination of McGarian and Mensa–Wilmot '025 make up for the deficiencies of McGarian alone

Claim 132 was rejected under 35 U.S.C. § 103(a) as being unpatentable over McGarian in view of Mensa–Wilmot '025. “Obviousness hinges on four factual findings: ‘(1) the scope and content of the prior art; (2) the differences between the prior art and the claims; (3)

the level of ordinary skill in the art; and (4) objective evidence of nonobviousness.’’ *Metabolite Labs., Inc. v. Lab. Corp. of Am.*, 370 F.3d 1354, 1368 (Fed. Cir. 2004) (citing *Nat’l Steel Car, Ltd. v. Can. Pac. Ry., Ltd.*, 357 F.3d 1319, 1334 (Fed. Cir. 2004)).

As discussed above, McGarian fails to anticipate claim 132. Mensa–Wilmot ’025 does not make up for the deficiencies pointed out for McGarian. In this appeal, the Applicant also points out that Mensa–Wilmot ’025 is not properly combinable with McGarian, but to the extent that it may be considered to be so, the combination of McGarian and Mensa–Wilmot ’025 do not render claim 132 unpatentable.

As discussed above, McGarian does not teach or suggest any of (a) at least two pads, (b) at least one blade formed on each pad, and (c) a plurality of cutting elements. While Mensa–Wilmot ’025 does teach cutting elements, it relates to a drill bit, not an underreamer. Mensa–Wilmot ’025 does not teach or suggest at least two pads having at least one blade formed on each pad. Thus, claim 132 is patentable over the combination of McGarian and Mensa–Wilmot ’025. Accordingly, the Examiner’s rejection should be reversed.

C. *Whether McGarian is properly combinable with Mensa–Wilmot ’025*

Claim 132 was rejected under 35 U.S.C. § 103 (a) as being unpatentable over McGarian in view of Mensa–Wilmot ’025. This rejection is improper because the references are not properly combinable.

Mensa–Wilmot ’025 is directed to a drill bit — not an underreamer. The Applicant notes that, while the two areas of technology seem facially similar, they are, in fact, not considered interchangeably similar to skilled artisans. There is no motivation to combine

Mensa-Wilmot '025 with McGarian. Any attempt to do so by the Examiner constitutes impermissible hindsight reconstruction.

“When a rejection depends on a combination of prior art references, there must be some teaching, suggestion, or motivation to combine the references.” *In re Rouffet*, 149 F.3d 1350, 1355 (Fed. Cir. 1998). The source of the teaching or suggestion may come from the nature of the problem, the teachings of the prior art, or the ordinary knowledge of those skilled in the art. *Id.* Nonetheless, Federal Circuit case law “makes it clear that the best defense against the subtle but powerful attraction of a hindsight-based obviousness analysis is a rigorous application of the requirement for a showing of the teaching or motivation to combine prior art references.” *In re Dembiczak*, 175 F.3d 994, 999 (Fed. Cir. 1999) (abrogated on other grounds). “Combining prior art references without evidence of such a suggestion, teaching, or motivation simply takes the inventor’s disclosure as a blueprint for piecing together the prior art to defeat patentability — the essence of hindsight.” *Id.*

In response to the Applicant’s argument that there is no motivation to combine the references, the Examiner relied on the statement in Mensa–Wilmot '025 that “[r]edundant cutters increase the durability and life of the bit 10 by increasing the diamond density.” (Final Office Action, pg. 7). The Examiner stated that this general teaching should not be limited to drill bits.

To rebut this assertion, the Applicant submitted the Declaration under 35 C.F.R. § 1.132 of Graham Mensa–Wilmot (the first named inventor of Mensa–Wilmot '025), along with the Request for Continued Examination filed on April 4, 2004. In paragraph 10 of that declaration, Mr. Mensa–Wilmot stated, “It is well known in the art that successful cutter element arrangements for drill bits may not be successful for underreamers, and vice versa.” While drill

bits are used to create a hole, underreamers are used to expand an existing hole. Mr. Mensa-Wilmot went on to declare that “one of ordinary skill in the art would not look to the teachings in one of these art areas in order to solve a problem in the other. Thus, one of ordinary skill in the art would not be motivated to combine the disclosure of McGarian with the disclosure of Mensa-Wilmot [’025].” The Examiner has not pointed to any evidence of any kind to refute the Declaration of Mensa-Wilmot.

In addition, in one recent case, the Federal Circuit stated that the rigorous application of the requirement for a showing of the teaching or motivation to combine the references is “consonant with the obligation of the [Examiner] to develop an evidentiary basis for it’s factual findings.” *In re Beasley*, 2004 WL 2793170, *3 (Fed. Cir. 2004) (unpublished).¹ The Examiner must point to some concrete evidence in the record to support the assessment. *Id.* at *5. The only evidence presented in this case is the declaration of Mensa-Wilmot, which states that one of ordinary skill in the art would not look to one of these areas to solve a problem in the other. Absent any other evidence, there can be no finding of a motivation to combine.

In fact, the Background in the specification of the ’961 application specifically states that “it would be advantageous to produce near-bit reamer cutting structures that incorporate, for example, advanced cutting structures used on PDC drill bits.” Thus, the combination of McGarian and Mensa-Wilmot ’025 constitutes impermissible hindsight reconstruction based solely on the Applicant’s disclosure. Accordingly, the references are not properly combinable.

¹ The Applicant notes that *In re Beasley* is an unpublished case. Federal Circuit Rule [#] prohibits the citation of unpublished cases to the Federal Circuit; however, the Applicant is aware of no such rule pertaining to the Board. In addition, *In re Beasley* is cited, not for the state of the law, but as an example of the Federal Circuit’s application of the current law.

D. Whether Hansen or Griffin are properly combinable with McGarian

Claims 136 and 147 were rejected under 35 U.S.C. § 103 (a) as being unpatentable over McGarian in view of Mensa–Wilmot '025, further in view of either Hansen or Griffin. This rejection is improper because the references are not properly combinable.

As discussed above, Mensa–Wilmot '025 is not properly combinable with McGarian because there is no motivation to combine the reference. Likewise, there is no motivation to combine either Hansen or Griffin with McGarian.

As with Mensa–Wilmot '025, both Hansen and Griffin relate to drill bits — not underreamers. As discussed above, the declaration of Mensa–Wilmot, under 35 C.F.R. § 1.132 states, “It is well known in the art that successful cutter element arrangements for drill bits may not be successful for underreamers, and vice versa.” Thus, it would not be proper to look to the drill bit patents of Hansen or Griffin to solve the problem of force balancing.

Thus, the combination of Hansen or Griffin with McGarian constitutes impermissible hindsight reconstruction based solely on the Applicant’s disclosure. Accordingly, the references are not properly combinable.

IX. Conclusion

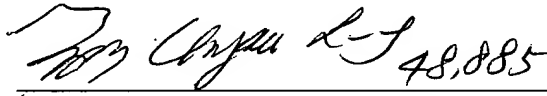
Independent claim 132 of the '961 application is patentable over the cited art because:

(1) McGarian does not disclose all of the limitations recited in the claim; (2) Mensa-Wilmot '025) does make up for these deficiencies; and (3) there is no motivation to combine the references. Dependent claims are patentable for at least the same reasons. Therefore, the Applicant respectfully requests that the Board reverse the Examiner's rejections of the claims.

Please apply any charges not covered, or any credits, to Deposit Account 50-0591 (Reference No. 05516/089001).

Respectfully submitted,

Date: 1/3/05


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Appendix A

Claims of Record in the Application

132. An expandable reaming tool, comprising:

at least two reamer pads operatively coupled to a tool body and adapted to be displaced between a retracted position and an expanded position;
at least one blade formed on each of the at least two reamer pads;
a plurality of cutting elements disposed on the blades,
wherein selected ones of the plurality of cutting elements disposed on one of the at least two reamer pads are positioned to contact a wellbore at a substantially same axial location as other selected ones of the plurality of cutting elements so as to form a redundant cutting arrangement ~~with other selected ones of the plurality of cutting elements disposed on a different one of the at least two reamer pads.~~

133. The expandable reaming tool of claim 132, wherein the plurality of cutting elements comprise at least one of polycrystalline diamond inserts, tungsten carbide inserts, and boron nitride inserts.

134. The expandable reaming tool of claim 132, further comprising at least one gage protection element disposed on a gage surface of the at least one blade.

135. The expandable reaming tool of claim 134, wherein the at least one gage protection element comprises at least one of a thermally stabilized polycrystalline insert and a polycrystalline diamond insert.

136. The expandable reaming tool of claim 132, further comprising a vibration damping insert disposed on the at least one blade.

137. The expandable reaming tool of claim 132, wherein the plurality of cutting elements are arranged so as to substantially balance axial forces between the at least two reamer pads.

138. The expandable reaming tool of claim 132, wherein the plurality of cutting elements are arranged so that a net lateral force acting on the at least two reamer pads is substantially zero.

139. The expandable reaming tool of claim 132, wherein the at least two reamer pads and the plurality of cutting elements are adapted to backream a formation in a wellbore.

140. The expandable reaming tool of claim 132, wherein the plurality of cutting elements are arranged to form a tapered cutting structure.

141. The expandable reaming tool of claim 132, wherein the plurality of cutting elements have backrake angles of greater than 20 degrees.

142. The expandable reaming tool of claim 132, wherein selected ones of the plurality of cutting elements have different backrake angles than other ones of the plurality of cutting elements.

143. The expandable reaming tool of claim 132, wherein each of the plurality of cutting elements has a diameter of less than 13.0 mm or greater than 13.0 mm.

144. The expandable reaming tool of claim 132, wherein the at least two reamer pads and the plurality of cutting elements are adapted to substantially mass balance the expandable reaming tool about an axis of rotation of the reaming tool.

145. The expandable reaming tool of claim 132, wherein the at least two reamer pads and the at least one blade are formed from a non-magnetic material.

146. The expandable reaming tool of claim 132, wherein the at least two reamer pads and the at least one blade are formed from a matrix material infiltrated with a binder alloy.

147. The expandable reaming tool of claim 132, wherein surfaces of the at least one blade proximate the plurality of cutting elements are shaped so that a cutting element exposure is equal to at least half of a diameter of the cutting element.

148. The expandable reaming tool of claim 132, wherein a perpendicular distance measured from a surface of the at least two reamer pads to an outermost extent of a gage cutting element disposed on the at least one blade is equal to at least twice a diameter of the gage cutting element.

149. The expandable reaming tool of claim 132, wherein a gage surface of the at least one blade comprises a hardfacing material.

150. The expandable reaming tool of claim 132, wherein a gage surface of the at least one blade is formed from a diamond impregnated material